VOLUME 143
JANUARY TO DECEMBER 1963

Mechanical World

AND ENGINEERING RECORD

Materials, Manufacture, Processes, Management
and Maintenance of Plant
and Machinery

Publishing Offices: 31 KING STREET WEST
MANCHESTER 3
and 158 TEMPLE CHAMBERS, TEMPLE AVENUE
LONDON, E.C.4

INDEXES

	Pages
Articles...	3
Topics	3
Book Reviews	4
New Standards	4
Engineering Record	4
Machinery and Equipment	4
Business and Professional	7
Trade Literature	7
Names Index	7
Obituary	11

Page numbers of issues in Vol. 143

January	**1– 40**
February	**41– 89**
March	**91–139**
April	**141–189**
May	**191–236**
June	**237–286**
July	**287–339**
August	**341–384**
September	**385–439**
October	**441–482**
November	**483–528**
December	**529–574**

Subject Index

Articles

A

Aeronautics Gallery, 399
Air Conditioning, Working Atmospheres, 492
Aluminium Coated Steels, 540
Aluminium I.C. Engine, 401
Angle, Accurate References for Calibrating Circles, 153.

B

Beam Design, Safety Factors in, 445
Beams, Uniform, Vibration of, 43, 100, 151, 195.
Bearing Materials, 4
Betatron for Testing, 449
Boring bar, 44 ft, 544

C

Canal Contour, Plant Pool Proposal, 487
Carbide Cutting with "Hi-Jet", 245
Casting Design, Finding the Best, 9
Castings, Massive, Nylon, 488
Chains, Alloy Steel, Safe Use of, 485
Chemical Works, Secondary Services for, 387, 446
Chromium Plating, Microcracked, 536
Circles, Accurate Reference Angle for Calibrating, 153
Coal, I-Preparation Plant, 10
Control, Data for Automatic Process, 45
Control, Numerical Milling, 491
Couplings, Fluid, and Torque Converters, 143
Creep of Metals and Alloys, 11

D

Data, Simplified Electrical Recording of, 344
DESIGN
- Casting, Finding the Best, 9
- Design for "Anti-Corrosion", 541
- Power Reserve Factor, 400
- Preliminary Design of Gas Turbine Plant, 7, 53, 107, 145.
- Safety Factors in Beam Design, 445
- Strength of Adhesive Joints, 392
- Thermal Stresses in Thin Discs, 193
- Tower Packings, 239, 292
- Vibration of Uniform Beams 43, 100, 151, 195
- Discs, Thin, Thermal Stresses in, 193

E

Effluent, Factory, Solids measurement in, 294
ELECTRICAL
- A Cure for Overhead Conductor Oscillation, 55
- Increasing Electrical Plant Loading, 194, 306
- Short-circuit Protection of Electrical Plant, 3:9
- Voltage Control, 48, 242, 295, 350
- Electronics, Mechanical, 390
- Explosive Forming, 105

Explosive, Pipe Joining by, 16
Extrusion of Steel Sections, Hot, 343, 394

F

FASTENINGS
- Screws Hold Tight, 252
- Fatigue, Metal, Surface Reactions During, 16

FINISHING
- Aluminium Coated Steels, 540
- Metallographic Finishes, 253
- Microcracked Chromium Plating, 536
- Permanent Protection for Steelwork, 200
- Pre-finished Sheet Metal, 17

Forging, the Hammer/Manipulator Combination, 531
Forming, Explosive, 105
Fuel, Smokeless, Ash Modifiers for, 291

G

Gas Grid, Methane, Testing, 393
Gas Turbine, Beach Landing, 444
Gas Turbine Plant, Preliminary Design, 7, 53, 107, 145
Gauges, Sheet and Wire, Comparison and Selection Table, 356
Hardness Elasticity Conversion for Rubbers, 15
Heat-treatment of Welds on Site, 10
Helium Gas Coolant for Nuclear Reactors, 13
Hydrodynamics Laboratory, New, 449
Hydraulic Rams, Synchronization of, 289

I

I-Coal Preparation Plant, 10

J

Jet Pumps, 96
Joints, Adhesive, Strength of, 392
Jointing Pipes by Explosives, 16

L

LETTERS TO THE EDITOR
Cost Engineering Terms-John E. Cran, 449
Security Versus the Boss-Francis B. Willmott, 449
Light Turning or Polishing Mandrel, 358

M

MAINTENANCE
- Cavitation Erosion of Cylinder Liners, 453
- Mechanical Faults which Cause Electrical Failure, 50
- Permanent Protection for Steelwork, 200
- Solids Measurement in Factory Effluent, 294

Mechanical Electronics, 390
Mechanism, Photographing High-Speed, 6
Mechanism, Some Holding, Devices for, Mechanical Packaging, 246, 300, 346
METALS
- Aspects of Brittleness in Metals 150, 197
- Creep in Metals and Alloys, 11
- Grain Size and Form in Metals 450, 486, 543
- Measuring the Strength of Metallic Whiskers, 348
- Modified Metals, 103
- Nitriding for Engineers, 533
- Nitrogen in Metals, 299
- Properties and Alloying Characteristics of Vanadium, 51
- Some Aspects of Fatigue in Metals, 353
- Surface Reactions During, Metal Fatigue, 16

Metal-Forming Processes, Recent Trends in, 537
Metal Sheet, Pre-finished, 17
Milling Control, Numerical, 491
Mining Automation, 389

N

Nimrod Proton Synchrotron, 399
Nitriding for Engineers, 533
Nitrogen in Metals, 299
Nuclear Reactors, Helium Gas Coolant, for, 13
Nylon Castings, Massive, 488

P

Packaging, Mechanical, Some Holding Devices for, 246, 300, 346
Parcel Sorting Machine, 532
Photographing High-Speed Mechanism, 6
Pipe Cutting Angle Adjustment, 393
Pipe Joining by Explosives, 16
PLASTICS
- Classification of Plastics, 94
- Plastics as a Model Material for Strain Recording, 343
- Plastics Bearing Materials, 4
- Plastic Castings, Massive, 488

Power from the Tides, 450
POWER PLANT
- Aluminium I.C. Engine, 401
- Cavitation Erosion of Cylinder Liners, 453
- Driving Cooling Water Shafts, 106
- Integral Cylinder/Condenser Turbogenerator Design, 148
- Large Scale Thermionic Power Generation, 250
- Power Reserve Factor, 400

POWER TRANSMISSION
- Fluid Couplings and Torque Converters, 143
- Looking Ahead in Power Transmission, 93
- Process Control, Automatic, Data for, 45

PRODUCTION PRACTICE
- Adjustable Centre Multi-Spindle Drill Head, 204
- Cam Operated Lifting Clamp, 495
- Compensating Clamp, 109
- Coolant Distributor for Turret Lathe, 19
- Curling a Tapered Shell, 156
- Cutting Multiple Start Threads, 156
- Deep Hole Drilling With an Old Lathe, 254
- Double Feed-out Simplifies Production, 19
- Expanding Locations for Components with Bore Variations, 303
- Facing and Turning an Eccentric Disc, 303
- Floating Idler Pulley for Speed Change, 109
- Large Peg Wheels, 303
- Making Large Box Wrenches, 454
- Pivoted V-bending Die, 56
- Plate for Spring Winding, 545
- Plate Milling Adaptor, 545
- Plunger-type Press Tool Stop, 303
- Removing Broken Studs, 109
- Removing Heavy Chucks, 454
- Roller Bearing Steady Bush, 545
- Rotary Grinding Thin Walled Tube, 454
- Rubber Bush Stops Vibrations, 204
- Safety Chuck Key for Lathe Use, 358
- Sharpening Gun Drills, 403
- Steady for Trepanning Discs, 56
- Steel Balls Apply Pressure in a Steady Rest, 109
- Threading Tool with Helix Angle Adjustment, 495
- Two-part Rings with a Complete Internal Diameter, 495
- Turning Long Shafts, 109
- Turret Support for Perfect Part-off, 358
- Vice Jaws for Tapered Work, 156
- Welding to Close Oversize Bores, 303

PUMPS
- Jet Pumps, 96
- Liquid Ring Pumps, 201
- New Method of Measuring Pump Flow, 241

R

Rubbers, Hardness Elasticity Conversion, 15

S

SAFETY
- Diesel Locomotive Fire Extinguisher, 542
- Safe Use of Alloy Steel Chains, 485
- Trailing Cable Guard, 494

Secondary Services for the Chemical Works, 387, 446
Shafts, Cooling Water, Driving, 106
Sheet Metal, Pre-finished, 17
Spring Coiling and Handling, 391
Spring for Test Loading, Liquid, 199
Steel Sections, Hot Extrusion of, 343, 394
Symbols for Multiples of Units, 102

T

TESTING
- Bench Torsion Testing, 443
- High Load Calibration, 452
- Liquid Spring for Test Loading, 199
- Measuring the Strength of Metallic Whiskers, 348
- New Method of Measuring Pump Flow, 241
- Plastic as a Model Material for Strain Recording, 343.
- Testing the Methane Gas Grid, 393

Thermal Stresses in Thin Discs, 193
Thermoelectrical Engineering, 104
Tides, Power from the 450
Torque Converters and Fluid Couplings, 143
Torsion Testing, Bench, 443
Tower Packings, 239, 292
TRANSPORT
- Recovery Vehicles for Dartford Tunnel, 532
- Underground Supplies Vehicle, 245

Ultrasonic Waves Rotated by Magnetic Field, 99
Uranium Ore, Processing, 489
Uranium Sources of, 154, 202, 248, 297, 354
Vanadium, Properties and Alloying Characteristics, 51,
Vibration of Uniform Beams 43, 100, 151, 195,

W

Watch Assembly System Doubles Production, 244
WELDING
- Arc Welding Supply Plant, 295, 350
- Friction Welding, 245
- Weld Heat-treatment on Site, 10
- Welding Titanium Linings 453
- Welding to Close Oversize Bores, 303

Topics

Advancement of Design, 287
Agricultural Machinery, 42
Aids to Research, 41
Air Bearings with Constant Film Thickness, 529
Aluminium in Gantry for Loading Alumina, 192
Applications Research, 238
Australian Precision Pioneer, 2
Automation, Towards, 237
Blast Furnace Fuel, New, 386
Blaenau Ffestiniog Machinery, 385
B.C.A.S., New Badge for, 529
B.M.E.F., 287
Boiler for a Day, 530
Carbon, Ceramics and Microelectronics, 386
Cold Extrusion of Hard Metals, 192
Continuous Casting, 2
Continuous Vertical Extrusion and Vulcanization of Cable Sheathing, 441
Copper Alloy Quality, 141
Copper Resists Wear, 192
De-icing on the Railways, 91
Deltic Loco Joins Museum Group, 237
Developing Designers, 342
Diamonds and Dinosaurs, 341
Diamond Saw Cuts a Jamb, 484
Dish Reflector, 91
Electric Road Heating, 530
End of a Vintage Pumping Engineer, 483
Engine Components, 41
Engineering Design, 142, 386
Engineering Record, 1
Engineering Profession, 237
European Coal, 141
Feasibility of Fatigue Forecasting, 441
Ffestiniog at Work, 192
French Apprentice System, 238
Gear Set for Science Museum, 191
Hand Skill, 142
High Marnham, 2
Holroyd Centenary, 2
IQSY, 92
Library Mechanization, 92
Large Gear Units, 2
Machine to Read Handwriting, 483
Machine Tool Noise, 41
Magnetic Proximity Switch, 529
Microwire, 386
Natural Diamonds Turn Hardened Steel, 541
Newcomen Memorial, 91
Non-ferrous Metals in 1962, 191
North Sea Oil? 530
Nuclear Power Turbine, 484

Oil Drilling Platforms, 191
One-oil Engine, 529
Organization of Reference Data, 341
Peak Lopping Sets, 92
PERA Becomes International, 530
Personnel Services, 3
Physics of Building Construction, 483
Pumping Unit for South Africa, 288
Record Steel Tube Output, 92
Research Associations, 342
Research for Industry, 341
Research Unit, 3
Safety in Mines, 42
Scottish Water Power, 192
Sorby Centenary, 238
Standards for Productivity, 288
Stock Control Pay Computer, 385
Structural Plywood, 42
TV for Inspection, 237
Time Capsule, 529
Time Study by Statistics—and Computer, 442
Unattended Telemetry, 142
U.K. Oil Pipline, 483
U.S. Standards and Metric System, 142
Vocational Training, 191

Book Reviews

Agitator Selection and Design, 158
Amendments to Wiring Regulations, 111
Ancient Engineers, The, 546
Applied Thermodynamics, 455
Aspects of the Theory of Heat Resistance of Metals and Alloys, 111
Automatic Process Control, 455
Automation and Computation, 258
Avoiding Aeration in Hydraulic Circuits, 497
British Petroleum Equipment, 497
Building Future, 21
Brazing and Soldering of Metals, 359
BICERA Reports Available, 306
Casting Design Handbook, 206
The Centrifugal Compressor Stage, 405
Cold Extrusion of Carbon Steel, 406
Compressors, Pneumatic Tools, and Valves: Directories, 456
Computer Literature, 406
Control Engineering—BISRA Report, 306
Copper and Copper-Alloy Plating, 258
Creep Under Complex Stresses, 57
Current Research in Machine Tools, 547
Design and the Education of Mechanical Engineers, 257
Design of Steel Girder Bridges, 258
Developments in Theoretical and Applied Mechanics, 305
Diamonds in Industry, 306
Diesel Engine Designing, 111
Dust Explosions in Factories, 406
Dynamics of Machines, 158
Economic Intelligence Sources, 206
Electric Energy in Europe, 158
Energy, 404
Engine Installation Manual, 22
Engineer Buyers Guide, 258
Engineering Design, 404
Engineering Science, 21
English-Russian Technical Dictionary, 57
Ergonomics for Industry, 360
Eurochemic Report, 306
European Nuclear Energy Agency Report, 547
Fatigue, 21
Ferranti Digital Computers, 112
Fire! 547
First Book of Machines, The, 497
Flow Measurement in Closed Conduits, 257
Friction and Wear in Machinery, 404
Fuels and Refractories, 305
Furnaces, 496
Gear Design, 21
Grinding Wheels and Machines, 305
Guide to Efficient Maintenance Management, 405
Heat Bibliography, 456
History of Engineering Drawing, 547
How to Train Supervisors, 112
Industrial Diamonds, 497
Industrial Electric Trucks, 257
Industrial Health Service, 21
IQSY, 455
Kempe's Engineers Year Book for 1963, 256
Lathes, 158, 404
Library Catalogue, 305
Machinery's Buyers' Guide 1963, 306
Machining Difficult Alloys, 206
Manual of Maintenance Engineering (1), 405
Manufacturing Processes, 404
Mechanical Engineering in the Coal Mining Industry, 57
Mechanical Handling Directory, 359
Microstructure of Bronze Sinterings, 112
Modern Electrical Equipment for Automobiles, 158
Modern Jointing Techniques, 257
Modern Power Station Practice, 405, 496
NRDC Bulletin, 22
N.C.O's of Industry, 360
Noise in Industry, 456
Non-Ferrous Metals Directory, 22
Oil Map, 497
Operating Machine Tools, 258
Ordinary Differential Equations, 21
The Organization for Economic Co-operation and Development, 405
The Origins of Chemical Names, 305
Permanent Magnets and Magnetism, 256
Photoelasticity, 404
Pictorial Text Book of Engineering, 455
Piston Gauge Pressure Measurements, 406
Power Investment Criteria, 497
Practical Mechanical Design, 405
Principles of Air Conditioning in Theory and Practice, 305
Production Bottlenecks, 112
Production Engineering Jig and Tool Design, 496
Properties of Hydrogen, 359
Properties of Steel Castings, 497
Protection of Structural Steelwork, 111
Radiation Protection Norms, 58, 456
Recommended Practice for Troughed Belt Conveyors, 58
Rennie, John, 404
Research Report, 359
Rocket Propulsive Elements, 496
Roll Making for Rolling Mills, 359
Safety in Use of Drilling Machines, 497
Safety in Use of Mechanical Presses, 21
Science of Rubber, 306
Scots Engineers and Shipbuilders, 22
Secretarial Service, 359
Single Spindle Automatics, 57
Space Radiation Effects on Materials, 112
Spray Way of Painting, 547
Systems of Electrical Units, 21
Technology Index, 406
Theory and Fundamental Research, 405
Thermal Insulation Contracting, 406
Thermodynamics, 359
Thermoelasticity, 404
Tools and Machines, 404
Trade Associations and Professional Bodies of the United Kingdom, 258
Translations from the Russian, 547
U. S. Patents, 21
Welding Reports, 548
Worked Examples in Engineering Mathematics, 111
Workshop Processes, 257

New Standards

Asbestos Cement Slates and Sheets, 360
Automobile Standards, 206
Bolts and Nuts, 548
Bushings for Alternating Voltages above 1000 V, 360
Butt-welding Pipe Fittings, 360
Classification of Covered Electrodes, 498
Climatic and Durability Testing of Components for Telecommunication and Allied Electronic Equipment, 258
Coir, Hemp, Manila and Sisal Ropes, 360
Copper and Copper Alloy Standards, 548
Copper Standards, 498
Dimensions of Toroidal Sealing Rings, 58
Electrical Signals for Telemetry and Control, 258
Enameled Round Copper Conductors—Metric Units, 258
Flanges and Bolting for Pipes, Valves, and Fittings, 112
Fractional Horsepower Endless V-belt Drives, 22
Fusion-welding of Copper, 498
Gauge and Letter Drill Sizes, 360
General Purpose Brass Tubes, 497
General Purpose Hose Clips, 360
Guide to Universal Decimal Classification, 406
Heavy Duty Electric Overhead Travelling and Special Cranes for Steelworks, 112
1962 Index to ASTM Standards, 306
I-section Straightedges, 498
ISO Draft Code for Boilers, 498
ISO Metric Screw Threads, 456
Letter Symbols, Signs and Abbreviations for Electrical Science, 406
Light Gauge Copper Tubes, 498
Low and Medium Alloy Steel Pipes and Tubes, 498
Methods of Testing Water Turbine Efficiency, 22
Micro Hardness Testing of Rubber Components, 58
Mounting Pads for Low Pressure Mechanical Fuel Lift Pumps, 158
Nomenclature for Pistons for Internal Combustion Engines, 22
Power Switchgear Cables, 206
Precision Angle Plates, 498
Pressure Pipes in Austenitic Steel, 548
Polythene-insulated Telephone Distribution Cables, 58
Protecting Electrical Power Equipment Against Climate, 456
Punched Tape Codes for Controlling Machine Tools, 456
Reamers, 406
Rivets for Friction Linings, 158
Rolled Copper and Copper Alloy Plate, 360
Schedule for Copper Wire, 548
Size Designation for Chilled Shot and Grit, 498
Solid Drawn Copper and Copper Alloy Tubes, 497
Standardizing Terms for Wrought Aluminium, 548
Steel Air Receivers, 498
Steel Butt-welding Pipe Fittings for the Petroleum Industry, 112
Stress Relieved 7-wire Standard, 360
Symbols for Machine Tools, 456
Testing Fans, 548
Use of Electronic Valves, 58
Wire Braided Hose, 498
Wood Screws, 456
Worm Gearing, 306
Wrought Aluminium and Aluminium Alloys, 548
Wrought Copper and Copper Alloys, 406

Engineering Record

Anglo-Polish Trade, 362
Anglo-Soviet Quotas, 60
Automation for Productivity, 23
Basic Wage Rates, 361
BEA on Common Market, 114
British Mechanical Engineering, 260
Capital Expenditure Forecast, 59, 458
Carriage of Goods by Road, 500
Census of Production Summary, 208
Changes in Export Licensing, 113
Copper in the Future, 361
Contribution to Productivity, 499
David Brown Gear Group Expansion, 160
Drawback of Import Duty, 458
E.C.G.D. Business, 60, 260, 457
E.C.G.D. Rates, Simplified, 113
EFTA Regulations, 260
Engineering Exports, 160
Engines for Cars, 259
European Patent Law, 23
Examination of Lifting Machines, 500
Export Documents, 500
Export Guides, 60
Export Patterns, 259
Exporting Machinery to the United States, 407
Facilities for Factory Expansion, 458
Financial Guarantees for Large Contracts, 159
Fuel Efficiency Pointer to Productivity, 499
Fuel Oil Tax and Exports, 207
Grants for New Plant, 458
Help for Export Exhibitors, 260
Hours and Wages Indices, 114
Industrial and Export Trends, 159, 361, 549
Industry Location Service, 114
Insured Exports Record, 550
Iron and Steel Scrap, 160
Machine Tool Revival, 207
Machinery for Hungary, 114
Manpower in Engineering, 114
Marking of Imported Ball Bearings, 208
Market Intelligence Library, 549
Markets for Steel, 549
National Industrial Organization, 362
Non-Destructive Testing, 60
Oil Reserves, 207
Opportunities for Mechanical Engineers in South Africa, 307
Orders, Deliveries, Production and Exports in the Engineering Industries, 60, 114, 160, 208, 260, 308, 362, 408, 458, 500, 550.
Patents Liaison Group, 59
Pneumatic Machinery Exports, 259
Ratepayers' Burden, 457
Selling in Europe, 362
Sheffield Industries Exhibition Centre, 458
Strategic Goods, 208
Termination of Employment, 550
Turnround in Ports and Docks, 550
Trucks and Engines for Far East, 457
U.K./Roumanian Trade, 550
Who Buys Machinery? 308

Machinery and Equipment

ACTUATORS
Linear Actuator, 76
Electric Valve Actuators, 313

ASSEMBLY
Automatic Assembly System, 459
Air Curtain Cabinet, 461

BEARINGS
Silver Plate Engine Bearings, 559
Triple Seal Ball Bearings, 27

BOILER
Steam-raising Boiler, 320

BUILDING
Prefabricated Factory Buildings, 328

BURNERS
Automatic Oil Firing, 211
Fuel Oil Combustion System, 561

CABLE MACHINERY
Stationary Bobbin Cable Making Machine, 165

CLASSIFIERS
Powder Classifiers, 309

COMBUSTION
Smokeless Burning of Bituminous Coal, 280

COMMUNICATIONS
Intercom for Workshop, 76
Multi-programme Sound Signalling Unit, 509
Transistorized Hailer, 267

COMPONENTS
Cold Extrusions in Steel and Forged Gears, 521
Crusilite Tube for Non-electrical Use, 507
Metal O-Rings, 331
Machine Handles, Knobs and Bushes, 558
Precision Dowel Pins, 27
Precision Balls, 27
Self-fixing Ball Knobs, 366
Transmission Screws, 376

COMPRESSORS
Foot and Flange Mounted Air Compressor, 222
Hydrovane Compressor Unit, 471
Mobile Compressor Trucks, 434
Stationary and Semi-fixed Compressors, 28

COMPUTERS AND DATA PROCESSING
Computer for Oxygen Steelmaking, 466
Data Recorder, 162
High Performance Computer, 179
High Speed Data Plotter, 312
High Speed Dyeline Data Printing Machine, 502
Optical Analyser and Analog Computer, 508

CONTAINERS
Aluminium Containers and Ladders, 73
Box for Tools etc., 466
Intermediate Bulk Containers, 415
Handy Workshop Boxes, 521
Plastic Tote Boxes, 128
Plastic Work Boxes, 178
Storage Bins, 555

CONTRACTORS' PLANT
Earth Boring Machine, 465
Grading Machine Control, 469
Improved Soil Rammer, 82
Portable Battery Operated Earth Borer, 368

CONTROL
Accurate Speed Control, 416
Compact Press Control System, 65
Electronic Transmission System, 183
Heatmeter, 123
Photo-electrically Controlled Conveyors, 33
Production Control Aid, 413
Remote Valve Control, 32
Rotary Torque Actuators, 460
Temperature Controller, 120
Versatile Data Acquisition System, 412
Water Level Indicator, 131
Works Time Control, 115

COOLERS
Localized Cooling Equipment, 128

CORROSION
Additive for Water Systems, 231

COUNTERS
High Speed Counters, 568
Universal Counter, 270

DOCK & HARBOUR EQUIPMENT
Boom Handling Rig, 503

DRAWING OFFICE EQUIPMENT
Hydraulic Drafting Stands, 460

ELECTRICAL
Accurate Voltage Stabilization, 313
Cable Joints, 509
Cam-action Terminal Blocks, 419
Combined Switch, Fuse and Light, 232
Contactor, 426
Control Amplifier for Rectifiers, 501
Copperweld Wires, 372
Current Collector for Icing Conditions, 327
Detectors, Phasing Rods, Line Testers, and Proving Units, 334
Discrepancy Switch, 329
Dust Proof Motor, 177
Dust/Splash-proof Motor Starters, 81
Edge Connectors, 519
Electric Motors and Alternators, 462
Electrical Relays, 432
Heat Sink for Rectifiers, 314
Heavy Auxiliary Motors, 331
Improved Silicon Rectifier Ratings, 365
Industrial Light Fitting, 460
Insulation Flaw Tester, 434
Large Aluminium Transformer Tanks, 328
Lighting Control, 367
Localized Lighting Unit, 368
Magnetic Vane Proximity Switch, 410
Metering for Voltage Stabilizers, 265
Miniature Control Centre, 465
Motors for Steelworks, 554
New Conductive Cement, 274
Packaged Circuits, 223
Portable Electrometer, 427
Portable Lighting, 330
Portable Multi-range Electrometer, 369
Power Relays, 115
Protective Spark Gap, 75
Proximity Switch, 269
Quartz-Iodine Lamp, 64
Radial Brush Holder, 25
Relays and Contactors, 210
Rotatrickle Impregnator, 478
Stator Winding Machines, 311
Time Delay Pushbutton, 276
Timing Relays, 172
Transistorized Proximity Switch, 324
Variable Frequency Power Generators, 374
Variable Speed Motors, 565
Vertical Motor/Alternator Flywheel Set, 320
White Light from Sodium Lamp, 310

ENCAPSULANTS
Transparent Resin for Embedment, 416

ENGINES
Three Horsepower Diesel, 423
Perkins Diesel, 432

ENVIRONMENTAL TESTING
Stabilizing and Test Chambers, 365

FACTORY
Factory Building System, 469
Flexible Doors, 470
New Eclipse Factory Block, 120
New Offices, H. W. Kearns, 117

FANS
High Pressure Fan, 279
Fans for Hot or Damp Air, 471

FASTENINGS
Collet Locknut, 433
Heli-coil Screw Threads, 372
Piercing Nuts, 468
Self-locking Nuts, 183, 501
Socket Set Screws with W-points, 370

FEEDERS
Rotary Disc Feeders, 35

FILTERS
Coolant Mist Filters, 116
Filter Presses, 332
Filters for Vacuum Pumps, 418
Non-metallic Filter With Glandless Pump, 501
Oil Filter for Diesels, 25
Sintered Metal Filter Elements, 563

FINISHING
Airless Paint Sprayer, 282
Automatic Finishing, 281
Controlled Humidity Cleaning Technique, 363
Conveyors Speed Car Painting, 64
Electroplating Rectifiers, 332
Hinac Coating Process, 333
Hydraulic Motors for Paint Spraying, 425
Mini-Dunker Metal Washer, 162
New Nickel Plating Process, 31
Nickel/Aluminium Spray, 363
Paint Bondings for Aluminium, 415
Paint for Locomotives, 122
Pressure Feed Paint Containers, 273
Protective Coating for Heavy Equipment, 277
Special Dipping Plant, 412
Spray Cleaner for Metals, 368
Spray-gun Mover, 174
Two-litre Electroplating Unit, 181

FOOD MACHINERY
Metered Food Filling, 178

FLOWMETERS
Electrical Flowmeters, 214

FORGING
Massey on the Madras Motorway, 473
New Massey Hydrostamp Hammer, 510

FOUNDRY
Centrifugal Casting, 363
Continuous Casting, 373
Portable Foundry, 411
Shell Moulding Machine, 222

FUEL
Blending Coal, 435
Fuel Additive, 409

FURNACES
Bright Annealing and Brazing Furnace, 226
Furnace Coating, 161
Gasfired Incinerators, 221
Heat Resisting Furnace Bearers, 126
High Vacuum Melting Unit, 29
Oil, Gas and Electric Furnaces, 180
Vacuum Furnace for Beryllium, 169
Vacuum Induction Furnace, 421

GLASS FIBRE
Moulded Glass Fibre Sheet, 74

GLASSWORKING
Automatic Glass Toughening Plant, 514

GOVERNORS
Temperature Compensation for Governors, 33

GRINDING MILLS
Automatic Grinding and Crushing Plant, 225

HARBOUR WORKS
Raykin Fender Units, 557

HEATING & VENTILATING
Air Diffuser, 435
Collects Toothbrush Dust, 81
Outside Sun Blind, 459
Portable Dehumidifier, 28
Silent Fan, 115
Ventilation Grilles, 364
Warm Air Heating Unit, 501

HYDRAULICS
Hydraulic Control Valves, 127
Hydraulic Equipment, 272
Hydraulic System for Irradiation Plant, 30
Hydraulic Valves, 124
Hydrostatic Transmission, 28
Self-clearing Spray Nozzle, 26
Wyclip Scraper Rings, 124

INDEXING SYSTEMS
Manifold Indexing Units, 231

INSTRUMENTS
Comparator Gauge, 367
Comparator, New, 506
Digital Micrometer, 277
Electro-mechanical Comparator, 474
Electronic Temperature Transmitter, 28
Graphic Recorder, 375
Large Screen Projector, 61
Low-range CO_2 and O_2 Indicators, 225
Magnetic Base for Dial Gauges, 467
Measuring Small Bores, 325
Micromanipulator, 213
Optical System for Nuclear Reactor, 516
Quantitative Gas Density Monitor, 429
Rack Mounting Recorder, 82
Servo-operated Autocollimator, 265
Sheet Thickness Classifier, 32
Signal Recorders, 417
Surface Pyrometer, 27
Tank Viewing Instrument, 115
Transistorized Stroboscope, 321
Ultra-Violet Light Recorders, 472
Woven Temperature Probe, 363

LUBRICATION AND LUBRICANTS
Dry Film Lubrication, 370
Grease for Automatic Systems, 270
Molybdenized Spring Lubricant, 269
Penetrating and Easing Oil, 220
Pen-style Lubricator, 123
Portable High-pressure Greasing Unit, 371
Rocol Products Renamed, 420
Screw Thread Lubricant, 184
Sprayable Molykote Formulations, 268

MACHINE TOOLS
Air Press, 77
Automatic Drilling and Tapping, 310
Automatic Saw Tooth Notching Machine, 278
Bar Cropping Machine, 182
Bending Machines and Jacks, 562
Bevelling Machine, 317
Centre-hole Grinding Machine, 364, 431
Coil Cut-to-Length Line, 326
Compact Power Hack Saw, 266
Copy Machining for Speed and Accuracy, 262
Copy Milling Machine, 61
Diamond Tooling, 212
Die Handler, 36
Disc and Cylinder Flanging Machine, 79
Disc and Face Cam Miller, 375
Downstroking Bending Presses, 309
Electro-hydraulic Cutting Presses, 309
Folding Machine, 133
Forging Machines, 36
Four-head Multi-purpose Machine, 75
Gear Producing Machines, 62
Guillotine Shears, 411
Heavy Duty Polisher, 224
Herbert Monoslide Lathe, 563
High Capacity Broaching Machine, 334
High Energy Metalforming Machines, 217
High Production Machining, 73
High Speed Saw, 377
High Speed Ultrasonic Drilling, 326
Hydraulic Index Table, 261
Hydraulic Roll Marking Machine, 161
Hydraulic Stretch Straightener, 72
Hydro-pneumatic Hold-downs, 277
Internal Grinder, 433
Larger Electropress, 315
Lathes for Bituminous Fibre Turning, 504
Low Cost Oxygen Cutting Machine, 61
Low Speed Drilling Machine, 276
Marconi Mechanical Engineering, 78
Marking-off Machine, 460
Milling Machines, 314
Miniature Automatic Transfer Machine, 477
Miniature Battery Drill, 264
Minute Drilling, 80
Multi-holder Toolpost, 119
Multiple Ripsaw and Edger, 67
New Broadbent-Schofield Lathes, 281
New Lang Lathes, 72

Omniturn Production Lathes, 68
Pre-bending Press, 228
Precision Grinding, 431
Precision Leveller, 71
Portable Jig Spotter, 271
Printed Circuit Board Drilling Machine, 176
Production Gear Hobber, 35
Renewable Slide Covers, 169
Rotary Electric Wire Stripper, 230
Rotary Milling Table, 428
Small High Speed Drill, 506
Spark Erosion Machine, 168
Spindle Speeder, 410
Standard Numerical Controls for Machine Tools, 552
Stockholders' Profiling Machine, 570
Straightening Press, 31
Tap Grinding Fixture, 122
Tape Controlled Drilling Machine, 34, 63
Throw-away Tip Toolholders, 170
Throw-away Tooling, 262
Tool Slide Position Indicator, 116
Trumpf Nibbler Demonstration, 63
Tube Bending Machine, 312
Tube Plate Drill, 36
Tube Straightening Machine, 35
Two-speed Drill, 36
Up-cut Shearing Machine, 567

MAGNETS AND MAGNETIC EQUIPMENT
Iron Concentrator and Separator, 470
Magnetic Proximity Switch, 335
Module Magnets, 516
Two New Small Magnets, 409

MAINTENANCE
Glass Fibre/Resin Repair Kits, 502
Metal Degreasant, 506
Paper Wipers, 569

METALS AND ALLOYS
Alloys for Glassworking, 459
Design in Aluminium, 512
Steel from Stock, 365
Steel Stock Warehouse, 508

MECHANICAL HANDLING
Adjustable Pallet Racking, 560
Chain Slings and Shackles, 502
Conveyor Flighting, 183
Conveyors and Turntables, 513
Diesel Loaders Underground, 215
"Do-it-yourself" Conveyor, 515
Drum and Sack Tipper, 418
Eclipse Magnetic Quick Lifter, 116
Fork Lift Trucks, 503
Hand Pallet Truck, 324
Handling Molten Metal by Truck, 569
Heavy Load Stackers, 29
High Lifting Floor Crane, 468
Hopper Loader, 411
Industrial Trucks, 210
Jack Attachment, 462
Largest Truck Crane, 275
Lifts for Engine Assembly, 566
Long Travel Gantry, 373
Motocart for Works Transport, 220
New Yale Fork Lift Trucks, 271
Norwegian Electric Hoist, 69
Overhead Handling in Mechanized Foundry, 422
Pallet Lift Truck, 472
Pallets and Stillages, 126
Portable Suction Plant for Unloading Ships, 282
Power Shovel, 421
Roller Conveyor, 280
Rotary Airlock, 371
Selective Pneumatic Message System, 371
Site Passenger/Goods Hoist, 161
Spoil Conveyor, 522
Tractor Replaces Steam Engine, 27
Truck for Machine Shop, 374
Unit Magnetic Conveyors, 321

MINING EQUIPMENT
Roller Mining Stilt, 525
Continuous Coal Ripper, 274

MIXING MACHINERY
Ploughs for Mixers, 115
Homogeneous Mixing Pulsator, 134

MOULDING MACHINERY
Moulding Mixed Products, 167

OFFICE EQUIPMENT
Document Holders, 266
Duplicator Service for Engineers, 168
Large Surface Photocopier, 327
Lettering Stencils, 422
Obliterating Medium, 333
Microfilm Camera for Drawing Offices, 504
Sterling Extension Machine, 218

OVENS
High Temperature Oven and Hot Table, 565
Turbulent Atmosphere Bakery Ovens, 463

PACKAGING
Making the Bottle Round the Contents, 502
Printing Awkward Plastic Packs, 80

PETROLEUM PLANT
Fractionating Column for Argentina, 554

PIPELINE HEATING
Heating Tapes and Pads, 316

PIPES, TUBES AND COUPLINGS
Captive Seal Tube Couplings, 465
Lightweight Pipe Hose, 134
Nylon Tubing, 27
Pipe Fittings and Cable Joints, 509
PVC Pipes and Joints, 433
Quick-release Cargo Couplings, 31
Simplifix Low Pressure Hose and End Fittings, 264
Solderless Coupling System, 504
Spun Concrete Pipe Production, 551
Swaged and Re-usable Couplings, 465
Welded Steel Tubing, 173

PLASTICS
Adhesives and Heat-reactive Phenolics, 429
Components in Asbestos Reinforced Plastics, 214
Plastic Replaces Cast Iron, 34
Pre-formed Nylon Pipelines, 272
PVC Coated Riddles, 36
Reinforced Plastics in Food Processing, 556

POWER PLANT
1200 kW AEI Back-pressure Turbine-generator Set, 364
Condensate Return System, 121
Dry Cooling Tower, 61
55 MW Gas Turbines, 67
Multi-purpose Diesel Engine, 376

POWER TRANMISSION
Automatic Hydraulic Transmission, 430
Compact Drive on Mobile Handling Plant, 118
Flexible Rubber Block Couplings, 464
Flexible Shafts and Couplings, 264
Grommet Belts, 476
Improved Drive for Looms, 175
Mechanical Clutches, 35
Pulley and Drive Line, 172
Quick Release Coupling, 219
Speed Reduction Units, 409
V-belt Drive in Continuous Duty Since 1961, 274
Variable Speed Drive, 369

PRESSES
Air Hydraulic Press, 25
Compacting Presses, 564
Elastic Die Blocks, 524
General Purpose Press, 509
New High Speed Open Front Press, 473
Press Counters, 518
500-ton Press, 567
Tamping Press for Refractory Blocks, 416
Time-controlled Press Guard, 132

PUMPS
Acid Pumps, 501
Automatic Diesel Univac Pump, 267
Blending Pump, 420
Diaphragm Pumps, 276
Electro-hydraulic Power Unit, 268
Glandless Pumps, 501
Heating Pumps, 207
Hydraulic Axial Piston Pumps, 323
Hydraulic Pump Mountings, 513
Industrial Vacuum Device, 318
Micro-metering Pump, 25
Mixed and Axial Flow Pumps, 229
Oil Hydraulic Gear Pumps, 129
Packaged Hydro-pneumatic Boosters, 505
Pump Constant Vacuum Chamber, 164
Reducing Sewerage Costs, 125
Swedish Gear Pumps, 83
Vapour Booster Pump, 409

RADIOGRAPHY
Cobalt-60 Container for Industrial Radiography 503

REFRIGERATION
Packaged Refrigeration Units, 330

WASTE DISPOSAL AND RECOVERY
Iron Reclamation Plant, 428
Packaged Refuse Disposal Plants, 427
Refuse Compacting and Transporting, 177

ROLLING MILLS
Packaged Rolling Mill, 328

ROOFING
Ruberdeck Roof System, 215

RUBBER
Precision Rubber Components, 559

SAFETY
Fire Detection System, 123
Fire-retarding Paint, 520
Guard for Riveting Machines, 281
Machine Guards, 364
Non-slip Mats for the Machine Shop, 184
Photo-electric Smoke Detector/Fire Alarm, 471
Pneumatic Electric Safety Lamps, 316
Reducing Noise from Factories, 561

SERVICES
Development Facilities, 311
Machined Parts, 420
Polar Axis Telescope Erection, 322
Research and Development Service, 475
Source of Turned Parts, 329

SHEET METAL WORKING
Aluminium Spinning, 273
Double Seaming Machines, 436
Sheet Corrugating Machinery, 376

STEELWORKS
Continuous Casting Plant For Slabs, 118

STORAGE EQUIPMENT
Cycle Parking, 216
Mobile Rack, 556

STORES
Components Handling, 259, 272

STRUCTURES
Automated Constructional Steel Fabrication, 568
Bridge Railings in Aluminium, 263
Tubular Crane Girders, 424

TANKS
Lined Mild Steel Tanks, 229

TESTING
Creep Testing Machines, 418
Lapping Welding Samples, 181
Life Testing Machine, 435
Pick-up Cartridge Testing Machine, 475
Test Film Coater, 175

TOOLS
Automated Tap Manufacture, 71
Bore Comparator Gauge, 425
Brooke-Pera Reamers, 372
Circlip Pliers, 270
Diamond Dresser for Off-hand Grinders, 519
Die-handler, 333
Hand Drill, 525
Heavy Duty Drills, 36
High Power/Weight Grinder, 427
Impact Wrench, 557
Ink Marker, 554
Machine Vices, 410
Miniature Soldering Irons, 414
Multiple Jaw Vice, 363
Multi-purpose Tool, 423
Oscillating Saw, 313
Pistol Grip Blow Gun, 419
Powered Screwdrivers and Nutsetters, 273
Power Tool with Shockproof Nylon Body, 507
Large Tunsten Carbide Bur, 518
Layout Fluid Applicator, 460
Reversible Torque Impact Wrench, 505
Toolmaker's Magnetic Vice, 553
2-ton-clamp/Jack, 26
Triple Duty Vice, 459
Twin-blade Chase Cutter, 330
Universal Crimping Tool, 328
Vibro-engraving Tool, 83
Work Benches, 374

TRANSPORT EQUIPMENT
Industrial Trailer, 569
Monorail Systems, 474
Moving Bulkhead Vehicle, 517
10-ton Tractor, 77
Tractor with Hydrostatic Transmission, 520

VALVES
Drained Globe Valves, 161
Electro-pneumatic Pilot Valve, 478
Four-inch Relief Valve, 426
Hydraulic Shut-off Valve, 377
Mini-valve, 319
Miniature Hydraulic Solenoid Valves, 464
Parallel Slide and Stop Valves, 230
Reducing Valves, 275
Sensitive Pneumatic Valves, 172
Solenoid Operated Control Valve, 555
Speed Control Valve, 180
Stop Valves, 130
Twist Operated Valves, 467

VENDING MACHINES
Automatic Refreshment Machines, 430

VIBRATION AND VIBRATORS
Rotary Vibrators, 176
Shock and Vibration Dampers, 127
Vibration Transducer, 566

WEAR RESISTANCE
Hard Chrome Cuts Wear, 209

WELDING
Anti-spatter Coatings, 426
"Briefcase" Welder, 468
Flux-coated Alloys, 31
Hard Facing Alloys, 422
Lightweight and Satchel Portable Arcwelders, 457
Orbital Welding Machine, 318
Portable Electric Welder, 163
Portable Engine-driven Welder, 424
Portable Stud Welding Equipment, 366
Stainless Steel Welding Electrodes, 163
Stopping-off Agent for Brazing, 425
Welded Press Frame, 23
Welding Machines and Equipment, 173
Welding Positioner, 261

WOODWORKING
Tilting-arbor Dimension Saws, 558

Business and Professional

Acheson Lectures, 88
Aluminium Federation, 137
Appeal to Mechanical Engineers, 338
Bronze Foundry Industry Mobile Laboratory, 338
Company Acquisitions, Trading Agreements, Agents and Distributors, etc., 38, 87, 136, 186, 235, 285, 338, 381, 438, 481, 527, 573.
Contracts and Work in Progress, 39, 89, 139, 189, 235, 286, 339, 384, 439, 482, 528, 574
Creep in Structures, 137
Design Appreciation Courses for Engineers, 481
Engineering Firm's Gift to Worcester College, 285
Engineering Institutions to Raise Standards, 285
Film News, 87, 137, 187, 235, 338, 573.
Harvey Apprentice School, 438
Hydromechanics Research Laboratory, 338
Industrial Art Bursaries, 1963, 481
Iron Curtain, 4,000 Miles Behind the, 382
I.W.M. New Branch, 438
Long Service Awards, 88
Low Cost Automation, 187
National Certificates, 235
National Industrial Safety Month, October, 1963, 481
National Productivity Year, 88
New Export Group, 382
Pera Conference, 235
Petrie Memorial Scholarship, 382
Post-graduate Courses for Engineers, 382
Price Reduction, 235
R.N. Electrical Officers, 285
R.S.A. Bursaries, 188
Review of Industry, 137
Safety "Oscar", 285
Synthetic Diamonds, 338
Zinc, 527

Trade Literature

Access Towers, 188
Acoustical Plastic, 573
Advances in Marine Engineering, 383
Air Swept Mills, 338
Ammonia Synthesis, 39
Annealing and Normalizing with Town Gas, 438
Asbestos Keeps Fire and Heat at Bay, 39
Automatic Dimmer, 573
Bailey Bridges, 39
Bakelite Laminated, 439
Ball Bearings, 286
Ball Check Valves, 438
Barber-Colman Products, 188
BMC Engines, 383
Bearing Metal, 188
Bench Centrifuge, 39
Besco Machinery, 438
Bulk Melting Flexibility, 383
Calendars, 88, 138, 383
Centrifuges, 573
Chain Drives, 235
Chain Drives for Papermaking and Printing, 481
Chain Slings, 39
CIBA in Britain, 188
Circuit Breaker Units, 481
CO_2 Meters, 189
Cold Forming, 188
"Counting Made Easy", 138
Crane, 188
Cutting Oils, 39, 188
Data Handling, 573
D. C. Amplifier, 39
Degreasing Machines, 338
Die Forgings, 338
Dividing Fixtures, 338
Drilling and Tapping Heads, 88
Dust Collection, 188
Electric Motors, 39
Electromagnetic Counters, 39
Engineering Design, 188
Engineering Rubber, 383
Excavators, 438
Fixing Devices for Every Purpose, 138
Flying Shears, 573
Ford Industrial Engines, 39
Foundry Equipment, 438
Friction Materials, 138
Furnaces, 527
Gas Furnaces, 188
G.E.C. Plastics Products, 286
Germanium Plating Rectifiers, 235
Hacksaw Blade User Chart, 338
Hand Hammers, 573
Hard Surfacing, 189
Harvey Products, 438
Hicyclic Electric Tools, 88
High Speed Milling, 438
Hot Galvanizing, 383
Hot Saws, 188
How a Diesel Engine Works, 527
H.S.S. Drills, 188
Hydraulic Equipment etc., 383, 573
Induction Heating and Melting, 383
Industrial Safety, 88
Industrialized Building, 481
Infinitely Variable Gears, 285
Lathe Chucks, 188
Linear Motion Shafting, 235
Liquid CO_2 in Bulk, 338
Liquid Flow Measurement, 382
Low Resistance Tester, 527
Lubrication Data for Design Engineers, 383
Machine Tool Stock List, 527
Machine Tool Control, 39
Marine Compressor, 573
Market Research, 573
Measuring Instruments and Gauges, 39
Metal Stitching, 438
Microreproduction, 439
Mill Audio Controller, 439
Milling Machine Attachments, 286
Mining Equipment, 235
N-S Variable Speed Motors, 383
Nylon Gears, 527
Oil Seals, 482
Pneumatic Cylinder Calculator, 286
Power Supply Rectifiers, 383
Precision Boring, 39
Precision Instrument Components, 188
Preimpregnated Glass Fibre Materials, 39
Printed Circuits, 382
Pumps for Chemicals, 482
Quality Steels and Specifications, 138
Rechargable Batteries, 439
Rectifier Products, 138
Rectifiers, 383, 573
Renold Chains, 481
Resin/Glass Depositors, 383
Rotary Table, 382
Scaffold Fittings, 39
Screw Thread Series, 39
Segmental Saws, 438
Selecting Your Cutting Oils, 482
Semi-muffle Furnace, 89
Separators, 88
Ship Machinery, 286
Sifbronze Lists, 39
Slip Gauges, 88
Slotted Steel Shelving, 383
Solid Tungsten Carbide Taps, 438
Split Die Forgings, 39
Spray Nozzles, 286
Springs and Circlips, 482
Standard Starters, 189
Steam Generator, 188
Steelwork, 573
Stop Clutch Brake Motor, 338
Switchgear, 88
Taildoor Loaders, 188
Taps and Dies, 439
Teleprinting, 88
TI Engineering Products, 39
Toggle Clamps, 188
Tool and Alloy Steels, 88
Tool Protection, 527
Tooling, 138
Torque and Speed Control, 286
Tractor Shovels, 188
Trucks for Hire, 482
Tubes for Boilers, 338
Twist Drill Catalogue, 383
TWW Construction Equipment, 382
Unit Heaters, 527
Variable Speed a.c. Motors, 235
Vertical Boiler, 88
Wall Charts, 88
Water Treatment, 39
Welding and Cutting Equipment, 188

NEW FACTORIES 39, 89, 139, 189, 235, 286, 339, 384, 439, 482, 528, 574

Names Index

Abbey Plant Co., 88
A. C. E.—Hartons Ltd., 186
Acheson Colloids Ltd., 88, 184, 284, 383
Acme-Efco Ltd., 174
Acrow (Engineers) Ltd., 423
Adams, Dr. J. B., 233
Adamson, Professor C., 84
Addison, T. N., 84
Advanced Products Co., 330
Aeraspray Associated Ltd., 273
A.E.W. Ltd., 565
Aims of Industry, 207, 457
Air Automation, 555
Airmec Ltd., 335
Albin Motor Co., 83
Albright & Wilson, (Mfg.) Ltd., 332
Alcan Industries Ltd., 263, 441
Alkan, M. K., Ltd., 501
Alexander, E., 84
Allan, C. L. C., 479
Allen, C., 485
Allen, Edgar, & Co. Ltd., 572, 573
Allen, Edgar, & Co. (Rhodesia) Ltd., 87
Allen, J., 378
Allen, P. W., & Co., 115
Allen, W. H., Sons & Co. Ltd., 38, 288, 338, 381, 438, 573
Allen West & Co. Ltd., 189, 437
Allen Gwynnes Pumps Ltd., 381, 527
Allibone, Dr. T. E., 185
Allied Designers Ltd., 526
Aluminium Federation, 137
Aluminium Laboratories Ltd., 16, 441
American Society for Testing and Materials, 142
AMF Ltd., 474
Analac Company, 527
Anderson, A., 378
Anderson, H. H., 135
Anderston Clyde Engineers Ltd., 373
Anderton Springs Ltd., 270, 482
Andre Rubber Co., 557
Andrews, F. W., 84
Angus, George, & Co. Ltd., 365
Anott & Harrison (Toolmakers) Ltd., 77
Applied Research (Instruments) Ltd., 374
Archdale, James, & Co. Ltd., 285
Archibald, R., 526
Armitage, R. A., 379
Armstrong Patents Co. Ltd., 372
Armstrong Whitworth (M.I.) Ltd., 337
Ascog Ltd., 286
Ashmole, G. F., 479
Ashmore, Benson, Pease & Co. Ltd., 225, 337, 438
Associated British Machine Tool Makers Ltd., 72, 284, 572
Associated British Maltsters Ltd., 517
Associated Electrical Industries, Ltd., 38, 67, 75, 81, 85, 86, 116, 136, 148, 186, 234, 285, 310, 328, 330, 383, 410, 465, 481, 484, 527, 572, 573
AEI Automation Ltd., 466
A.E.I. (N.Z.) Ltd., 337
Associated Portland Cement Manufacturers, 191
Associated Engineering Ltd., 3, 41
Association of Bronze and Brassfounders, 141
Association of Cost Engineers, 449
Atkin, E. A., 37
Atkin, R. B., 37
Atom Dissol Sales Co. Ltd., 506
Attack Engineering (Proprietary) Ltd., 381
Automation Ltd., 38, 369
Avery, W. Ltd., 452
Avon India Rubber Co. Ltd., 524
Aylen, Rear Admiral I. G., 571
Aylesbury Automation Ltd., 35

B

Babbitless Co. (Gt. Britain) Ltd., 337
Babcock and Wilcox Ltd., 181, 192
Backwith, Arnold J. A., 480
Baddeley, Norman H., 379
Bagshawe & Co. Ltd., 513
Bahco-Condrup Ltd., 115, 137
Bailey, Sir W. H. & Co. Ltd., 275
Bain, William, & Co. Ltd., 136, 381
Baird & Tatlock (London) Ltd., 39, 86
Bakelite Ltd., 382, 429, 439
Baker, C. L. G., 436
Baker, Stephen, 571
Baker Perkins Ltd., 462
Balding Engineering Ltd., 286, 382
Baldy, K. Z., 234
Baldwin, T., 436
Bamkin, J. W., & Co., 122
Bannister, R. H., 135
Barber-Colman Co., 188
Barker, John, 84
Barlow-Whitney Ltd., 478
Barnes, Douglas, Ltd., 309
Barrus, E. P., Ltd., 172, 426
Bartlett, D. C., 37
Bartolome, S. M. de, 238
Bass, John, Ltd., 462
Baty J. E. & Co. Ltd., 61
B. D. Steel Structures Ltd., 424
Beakbane, Henry, (Fortex) Ltd., 169
Beck, O. N., & Co., 28
Becker Equipment and Lifts Ltd., 178
Beeley, E. W., 443
Bell & Howell Ltd., 566
Bell Telephone Laboratories, 6, 99, 441
B.E.N. Patents Ltd., 282

Benians, H. Michael, 437
Benzie, Dr. R. J., 283
Berk, F. W., & Co. Ltd., 363
Berretti, A. R., 84
Betts, Jack, 479
Beyer Peacock & Co. Ltd., 438
B.I.G. (Engineering) Ltd., 433
Bigg, J. V., 135
Bill Switchgear Ltd., 88
Bird, Sydney, & Sons Ltd., 38
Birfield Group of Companies, 86, 87
Birfield Overseas Ltd., 137
Bishop, G., 437
Bishop, Sir Harold, 336
Black, John, 135
Black & Decker Ltd., 36
Blackburn, Jack, 336
Blackwell, Arthur Henry, 84
Bland, D., 378
Blandford, P., 283
Blank, E., 437
Bleaney, Professor B., 37
Blending Machine Co. Ltd., 176
Blick Time Recorders, 509
Blundell, Spence & Co. Ltd., 122
BMF Design and Developments, 185
Board of Trade, 23, 59, 113, 160, 208, 260, 549, 572
Boby, William, & Co. Ltd., 235, 284
Bonson, L. E., 37
Booth, James, & Co. Ltd., 399
Booth, K. E., 234
Booth, William, 479
Borg-Warner Ltd. (Morse Chain Div.), 38
Borrington, G. P., 436
Bound Brook Bearings Ltd., 563
Bowen, Ivor, 378
Bowthorpe Electrical Co. Ltd., 468
Boxford Machine Tools Ltd., 86
Boyd, George, & Co. Ltd., 380
Bradley, E. A., 283
Bradley, G. & E. Ltd., 338
Bralsford, H., 84
Bray Construction Equipment Ltd., 188, 411
Briggs, Geoffrey, 283
Bright, J. Harold, 336
Brimag (Industrial Magnets) Ltd., 516
Bristol Siddeley Engines Ltd., 92, 234, 285, 572
British Aluminium Co. Ltd., 512
British Automatic Conveyor & Equipment Ltd., 515
British Compressed Air Society, 259, 529
British Constructional Steelwork Association, 573
British Electrical Development Assocn., 115
British Electrical Repairs Ltd., 503
British Engineers Association, 114, 142, 160, 260, 287
British Ermeto Corporation Ltd., 180
British Hoist & Crane Co. Ltd., 161, 188
British Hydromechanics Res. Assocn., 338, 448
British Industrial Plastics Ltd., 86
British Insulated Callender's Cables Ltd., 38, 441
British Internal Combustion Engine Research Association (BICERA), 529
British Iron and Steel Federation, 192, 549
British Mechanical Engineering Federation, 287, 480
British Metal Corporation, 191
British MonoRail Ltd., 422
British Motor Corporation Ltd., 383
British Non-Ferrous Metals Research Assocn., 338
British Olivetti Ltd., 218
British Oxygen Co. Ltd., 61, 186, 235
British Productivity Council, 288
British Railways, 136
British Rema Manufg. Co. Ltd., 87
British Rototherm Co. Ltd., 130
British Tap and Die Co. Ltd., 439
British Welding Research Assocn., 245
Broadbent-Schofield Ltd., 281
Brockhouse, J., & Co. Ltd., 142
Bronx Engineering Co. Ltd., 35, 70, 228
Brook Motors Ltd., 177, 186, 284, 337
Brookhirst Igranic, 186, 481
Brooke Toole Manufg. Co. Ltd., 39, 372
Brown, David, (Huddersfield) Ltd., 2, 27, 35, 38, 137, 160, 285, 480, 481, 526, 572
Brown, J. Douglas, 237
Brown, V. G., 233
Bryans Ltd., 480
Bryant, V. J., 526
B.S.A. Tools Group, 88
BTR Industries Ltd., 234, 476
Buell Ltd., 309
Building Research Station, 483
Bullows, Alfred, & Sons Ltd., 425, 437
B. & R. Relays Ltd., 172
Burflex Ltd., 518
Burgess Products Ltd., 83
Burhop, Professor E. H. S., 233
Burndept Ltd., 439
Burnerd, F., & Co. Ltd., 86
Burnley Aircraft Products Ltd., 226
Butcher, Philip J., 185

C

Cairnes, W. P. H., 233
Caltex (Ireland) Ltd., 420
Cambridge Instrument Co. Ltd., 27, 189
Cameron, J. M., 37
Caps Consultants Ltd., 439
Cardol Engineering Co. Ltd., 556
Carfrae, W. J., 571
Carlile, T., 379
Carlson, John C., 438
Carlyle Air Conditioning and Refrigeration Ltd., 330
Carpenter, R. B., 526
Carr, D. M., 37
Carr Fastener Co. Ltd., 186
Carter, George E., 436
Carter, H. M., 571
Carter Gears Ltd., 285, 369
Carver & Co. (Engineers) Ltd., 26
Casting Repairs Ltd., 438
Catmur Machine Tool Corpn., 311
Cement Marketing Co. Ltd., 501
Central Electricity Generating Board, 2, 61
Central Electricity Research Laboratories, 55, 250
Centralube Ltd., 371, 480
Centrum Electronics Ltd., 76
Chamberlain Industries Ltd., 79
Chandos, Lord, 283
Chandrasekhar, Professor S., 37
Charlton Concrete Co. Ltd., 323
Chatburn & Chantry Ltd., 72, 87, 186
Chaseside Engineering Co. Ltd., 235
Chemidus Plastics Ltd., 433
Chilton Electric Products Ltd., 372
Chloride Batteries Ltd., 88
Christy, R. K., 37
Churchill Machine Tool Co. Ltd., 62, 187
Ciba (A.R.L.) Ltd., 188
Cincinnati Shaper Co. Ltd., 187
Clark, E. G., 336
Clark, Neil M., 526
Clarkson Valve Co., 284
Cleary, J. E., 283
Clegg, J. A., 37
Clifton & Baird Ltd., 438
Cobb, G. E., 135
Cochran & Co., 88
Cohen, Cyril M., 379
Cohen, George, 600 Group Ltd., 86, 275, 527
Coleman, John P., 37
Collimat Development Co. Ltd., 25
Collis, W. G., 336
Concrete Ltd., 481
Concrete Sawing Equipment Ltd., 341
Conductron Corporation, 508
Consolidated Pneumatic Tool Co. Ltd., 88, 437, 505
Controlled Heat and Air Ltd., 188
Controlled Mechanical Processes Ltd., 272
Cook & Perkins Ltd., 428
Cooke, E. A., 135
Cooper, H., 531
Cotton, Bernard E., 234
Council of Industrial Design, 481
Courtney, Eric, L., 336
Coventry Climax Engines Ltd., 569
Coventry Gauge & Tool Co. Ltd., 35, 38, 88
Coventry Movement Co. Ltd., 367
Cowell, E., 37
Crabtree, J. A., & Co. Ltd., 481
Cramp, W. E., & Sons (Tipton) Ltd., 286
Cran, John E., 449
Crane & Hoist Supplies Ltd., 69
Crane Packing Ltd., 338
Craven Bros. (Manchester) Ltd., 383
Cravens Ltd., 441
Crawshaw, R., 436
Creed & Co. Ltd., 88
Creek, F. R. L., 135
Crompton Engineering Co. (Madras) Ltd., 186
Crompton Parkinson Ltd., 337, 527, 565
Crosfield, Joseph, & Sons Ltd., 380
Cross, K. R., 479
Crossley Premier Engines Ltd., 235
Croydon Engineering Co. Ltd., 462
Crucible Steel Co. of America, 453
Cuckson, J. A., 246, 300, 346
Cunnah, E., 379

D

D. & H. Metal Treatment, Ltd., 338
Darby, L. A., 479
Darwins Ltd., 126
David, W., & Sons Ltd., 502
Davidson, D. F., 378
Davidson & Co. Ltd., 284, 381
Davis, G. M., 87
Davies, Leslie, 571
Davis, John, & Son (Derby) Ltd., 316
Davy-Ashmore Group, 88, 380
Davy & United Engineering Co. Ltd., 438
Dawe Instruments Ltd., 321
Dawson Bros. Ltd., 162
Dawtrey, E. R., 135
Delaney Gallay Ltd., 127
Deloro Stellite Ltd., 459
Denison Deri Hydraulics Ltd., 124
Dennison, H. A. J., 537
Department of Scientific and Industrial Research 45, 341, 573
Derlon Ltd., 371
Desoutter Bros. Ltd., 86, 284, 313
De Vries Industrial Diamonds Ltd., 572
Dewhurst & Partner Ltd., 337
Dewrance & Co. Ltd., 131
Dexion Ltd., 560
Diamond Information Bureau, 573
Dick, R. & J., Ltd., 234, 284, 437, 572
Dimmick, R. G. A., 436
Dinger Machine Company, U.S.A., 441
Distington Engineering Co. Ltd., 187, 337
Ditchburn Vending Machines Ltd., 430
Diversey (U.K.) Ltd., 368
Dobbie McInnes (Electronics) Ltd., 417, 527
Dodd, J., 37
Dodds, Dr. J. M., 185
Donovan Electrical Co. Ltd., 210
Dorman Long (Bridge & Eng'g.) Ltd., 186, 285
Dorman Machinery Sales Ltd., 375, 481
Double, E. C., 479
Douglas, G. C. G., 234
Drakin Ltd., 410, 459
Drallim Industries Ltd., 284
Drallim Tube Couplings Ltd., 470
Drill Service (Horley) Ltd., 80, 438
Dronsfield, Frank, 283
D S Associates Ltd., 526
Duckworth, Captain Ralph C. M., 85
Duke & Briggs Engineering Co. Ltd., 363, 527
Duncan, Ian G., 84
Dunlop and Ranken Ltd., 88
Duscon Engineering Ltd., 86
Dynex Co. Ltd., 323

E

Earth Boring Machine Co., 465
Eddison Plant Ltd., 482
Edge & Sons Ltd., 39, 381
Edlington, N., 379
Edwards, F. J., Ltd., 63, 133, 182, 309, 315, 317, 438
Edwards High Vacuum Ltd., 170, 409, 418, 504
Edwards, Walter, 283
Elcometer Instruments Ltd., 434
Electrical Development Association, 24, 530
Electrical Power Engineering Co. (B'ham) Ltd., 235
Electro-Chemical Engineering, 31
Electrothermal Engineering Ltd., 365
Electronic Associates Ltd., 38, 312, 338
Electronic Machine Control Ltd., 324
Electronic & Mechanical Engineering Co. Ltd., 38, 418
Elgar Machine Tool Co. Ltd., 136
Ellams Duplicator Co. Ltd., 327
Elliott, A., 437
Elliott, B. (Machinery) Ltd., 68
Ellis Richards Ltd., 188
Elremco Sales Ltd., 426
Elstub, S., 479
Enfield Rolling Mills Ltd., 420
Engineering Co-ordinated Ltd., 372
Engineering & Plastics Manfg. Ltd., 416
English Electric Co. Ltd., 38, 87, 186, 187, 234, 237, 285, 338, 481, 527, 573
English Electric Diesel Engines Ltd., 338
Erecto Slotted Angle Co., 521
Esso Research Ltd., 386
Etchells, David, (Machinery) Ltd., 36
Etherington, B. J., 526
Euco Tools Ltd., 277
Eutectic Welding Alloys Co. Ltd., 163
Evans, John, 379
Evershed and Vignoles Ltd., 183, 185, 337, 527
Export Credits Guarantee Department, 60, 113, 159, 185, 260, 457, 550
Exatol Ltd., 382
Explosive Power Tools Ltd., 330
Extrudex Ltd., 337

F

Fairey Engineering Ltd., 272
Falk, M. & Co. Ltd., 136
Farrell, B., 283
Fawcett, Preston & Co., 380
Federation of British Industries, 159
Federation of British Rubber and Allied Manufacturers, 380
Federation of Engineering Design Consultants, 188
Fencion, Raymond K., 283
Ferguson Radio Corporation Ltd., 33
Ferguson & Timpson, Ltd., 526
Ferranti Ltd., 285, 573
Ferranti de, Sebastian, 185
Ffestiniog Power Station, 192
Fiat Tractors Ltd., 421
Fielden Electronics Ltd., 28
Film News, 87
Finniecome, J. R., 13, 154, 202, 248, 297, 354, 489
Firth Cleveland Fastenings Ltd., 501
Firthbourn Ltd., 36
Fisher, H. W. H., 336
Fisher & Ludlow Ltd., 481
Fisons Fertilisers Ltd., 481
Fix Equipment Ltd., 272
Flight Refuelling Ltd., 416
Fluid Power Ltd., 127, 463

Ford Motor Co. Ltd., 39, 136,
Forgings & Presswork Ltd., 521
Foundry & Metallurgical Equipment, Ltd., 137, 222
Foy, R. L., 571
F.R.D. Machinery Ltd., 527
Frankel, Dr. A., 135
Fraser, Andrew, & Co. Ltd., 513
Fromm, Dr. Norbert, 345, 394
Fuller Electric Ltd., 527
Funditor Ltd., 333
Furnascote Ltd., 136, 161

G

G.K.N. Group Research Laboratories, 168
G.K.N. Screws & Fasteners Ltd., 370
G.M. Power Plant Co. Ltd., 380
Galloway, Dr. F., 342
Gamma-Rays Ltd., 503
Gamet Products, 119
Gardner, John Maddox, 379
Gare, M. T., 436
Garrard Engineering and Manufacturing Co. Ltd., 475
Garringtons Ltd., 38
Gas Council, 188, 438
Gascoigne Ltd., 217
Gate Machinery Co. Ltd., 433
General Electric Company (Engineering) Ltd., 26, 87, 136, 186, 213, 235, 285, 286, 338, 380, 481, 527, 544, 572
Gent & Co. Ltd., 115
Gershon, J. C., 84
Gestetner Duplicators (B.S.O.) Ltd., 168
Gibbs, K. R., Co. Ltd., 84
Giddings and Lewis-Fraser Ltd., 75
Gilbert, G. & R. (Industrial) Ltd., 136, 221
Girdlestone Pumps Ltd., 122, 437
Gimson, David M., 84
Glass Developments Ltd., 386
Glen Creston Ltd., 134
Goddard, C. H., 37
Golder, Miss Mabel, 479
Goldstein, W. H., 527
Goodyear Pumps Ltd., 187
Gothic Engineering Co. Ltd., 211
Graphite Products Ltd., 274, 370, 425, 525
Gray, F. W. & Co., 368
Green, M. E., 479
Green, P. J., 529
Green, Thomas, & Sons Ltd., 186
Greenham (Plant Hire) Ltd., 323
Griffin & George Ltd., 429
Grimston Electric Tools Ltd., 276
Guffogg, J. W., 571

H

H.M. Stationery Office, 208
Hadnam, R. G., 480
Haine, Dr. M. E., 185
Halifax Tool Co. Ltd., 435
Hall, A. W., 542
Hall, Clifford, 37
Hall, H. F., 437
Hall & Pickles Ltd., 508
Hancock, P. F., 479
Hancock, V. A., 233
Handy Angle Ltd., 555
Harding, J. K., 84
Hardy Spicer Ltd., 382
Harlow, H. G., 335
Harlow, Robert, & Son Ltd., 426
Harvey, G. A., & Co. (London) Ltd., 27, 273, 385, 438, 527, 554, 567
Harris, John, Tools Ltd., 481
Harris, T. R., 9
Harris, R. W., 233
Harrison, B. C., 37
Hart, K., 336
Haymor Ltd., 123
Hayter, Dr. Alan J., 571
Hatchett & Co. Ltd., 277
Hattersley, Geo., & Sons Ltd, 175
Heathcote, Eric, 505
Heaton, A. G., 104
Heatlock Industrial Furnaces Ltd., 180
Heenan & Froude Ltd., 380
Hellermann Electric Ltd., 230
Hemming, J. A., Ltd., 87
Hengstler, J., & Co. Gt. Britain Ltd., 568
Herbert, Alfred, Ltd., 172, 481, 563, 573
Hepworth & Grandage Ltd., 380
Heyde, J. Bennett, & Co. Ltd., 220
Heywood, S. H., & Co. Ltd., 424
Hewitt, J. C., 135, 479
High Duty Alloys Ltd., 39, 338
Highwood Engineering Co. Ltd., 281
Hilger and Watts Ltd., 88, 265
Hill, J., 336
Hillyer, R. W., 479
Hilmor Ltd., 312
Hinchliffe, E. D., & Sons Ltd., 459
Hines, W. A., & Partners, 561
Hinton, Sir Christopher, 342
Hird-Brown Ltd., 38
Hirsch, Dr. P. B., 233
Hodgskiss, B. J., 135
Hoff, Mr. 185
Hoffmann Manufacturing Co. Ltd., 3, 88
Holiday, E. B., 379
Holland, M., 193, 343
Holman Bros. Ltd., 138, 209
Holmes, W. C., & Co. Ltd., 380
Holroyd, John, & Co. Ltd., 2
Holset Engineering Co. Ltd., 463
Honeywell Controls Ltd., 81
Hooker, Ronald G., 379
Hopps, C. D., 135
Hordern, Mason & Edwards Ltd., 473
Horne, R. W. C., 284
Hosker, Arthur, 84
Hot Dip Galvanizers Ltd., 383
Howard, Wm. & Son, Ltd., 364
Howe, M. F., 84
Hoyt Metal Co. of Gt. Britain Ltd., 188
Hubbard, W. A., 436
Hughes, Dr. J. E., 571
Hugman, P. B., 37
Humphreys and Glasgow Ltd., 114, 285, 338, 381, 438
Humphreys & Glasgow (Canada) Ltd., 527
Hunslet Engine Co. Ltd., 88, 285, 430, 572
Hutton, W., 479
Hydraulic Machinery Drives Ltd., 30
Hydraulics & Pneumatics Ltd., 319
Hymas, E. W., 479
Hymatic Engineering Co. Ltd., 130

I

I.G.E. (Control Equipment) Ltd., 65
Ibbett Engineering Co. Ltd., 532
Ilford Ltd., 502
Imperial Chemical Industries Ltd., 274, 338, 415, 527
Incandescent Heat Ltd., 89, 438
Indian Lead Zinc Information Centre, 85
Industrial Accountancy Partnership Ltd., 162
Insley Industrial Ltd., 27, 188, 438
Institution of Electrical Engineers, 250
Institution of Mechanical Engineers, 137, 235, 338
Institution of Works Managers, 382, 438
Interlas Ltd., 85
Intermit Ltd., 25
International Combustion Products Ltd., 439
International Computers and Tabulators Ltd., 179
International Engineering Concessionaires Ltd., 188
International Harvester Co. of Gt. Britain Ltd., 338
International Twist Drill Co. Ltd., 188, 383, 526
Ireland, James A., 379

J

Jackson, T. F. W., 84
Jameson, J. L., Ltd., 36
Jersey Electricity Co. Ltd., 444
John Bull Rubber Co. Ltd., 383
John-Mansville Co. Ltd., 138
Johnson, Dr. Arthur, 184
Johnson, C. H. (Machinery) Ltd., 82
Johnson, S. H., & Co. Ltd., 332
Johnson, Matthey & Co. Ltd., 181
Jones Tate & Co. Ltd., 313

K

K. Chemical Co., 175
K. & L. Steelfounders and Engineers Ltd., 460
Kay & Co. (Engineers) Ltd., 509
Kayser Ellison & Co. Ltd., 88
Kearney & Trecker-C.V.A. Ltd., 38
Kearns, H. W., & Co. Ltd., 117
Keelavite Hydraulics Ltd., 379
Keeton Sons & Co. Ltd., 567
Keith, R. A. & Co. Ltd., 519
Keith Blackman Ltd., 527
Kelsey, T. H., 336
Kemwell Ltd., 411
Kennametal (Great Britain) Ltd., 138
Kennan, R. R., 234
Kent, George, Ltd., 38, 135, 235
Kerry's (Ultrasonics) Ltd., 366
Keyswitch Relays Ltd., 432
Kilner, W. M., 84
Kilpatrick, T. S., 283
King, Donald M., 437
King, Geo. W., Ltd., 459
King, Hartford, M., 437
Kingston Engineering Co. Ltd., 376
Kinnis & Brown Ltd., 39
Kirby, F. N., 37
Kleenaroll Ltd., 569
Knowles & Foster, 558
Küchemann, Dr. Dietrich, 233

L

L.B. Technical Services Ltd., 284
Lampson, K. G., 283
Lancashire Dynamo & Crypto Ltd., 573
Lancashire Dynamo Electronic Products Ltd., 39, 120, 527
Lancashire Steel Corporation Ltd., 435
Lanco Factory, 244
Landis Lund Ltd., 431, 573
Lang, John, & Sons Ltd., 72
Lang Pneumatic Ltd., 88
Lant, Douglas P., 526
Lapointe Machine Tool Co. Ltd., 334, 381
Larkin, E. J., 185
Larkin Forge Ltd., 462
Laurence, Scott & Electromotors Ltd., 86, 234, 235, 383
Lawrie, J. & T. Ltd., 38
Laycock Engineering Ltd., 566
Lead and Zinc Development Association, 85
Le Bas Tube Co. Ltd., 88
Lee, Howl & Co. Ltd., 229
Lester-Brown Machine Tools Ltd., 412
Levesley, Brigadier Arthur, 233
Lewis, I. North, 283
Ley, M. H., 135
Leyland, Ralph, 283
Leyland Motors Ltd., 234
Light Alloy Construction Co. Ltd., 73
Linnell, R. H., 84
Little Green Engineering Co. Ltd., 520
Liverpool Borax Co. Ltd., 409
Lloyd, F. H., & Co. Ltd., 449
Loewy Engineering Co. Ltd., 186, 381
Long, Herbert, 479
Lucas, Joseph, Ltd., 28
Lucas Industrial Equipment Ltd., 235
Lumb, S., 84
Lummus Company, The, 39
Lumsden, C. E., 494
Lye Trading Co. (Tinplate) Ltd., 32
Lyne, Cdr. M. G., 571
Lyons, J., & Co. Ltd., 178
Lyth, P. G., 379
Lywood, W. D. M., 283, 336

M

MAC Valves, Inc., 187
McCraith, W., 37
McCulloch Corporation, 424
McCullough, T., 37
McDermott, D., 436
Macdonald, R., 379
Macfarlane, J. C., 336
Macfarlane, Lang & Co. Ltd., 556
McGough, J., 379
McHugh, John, 84
C. Mackechnie Jarvis & Partners, 437
Maclaren, Robert, & Co. Ltd., 527
Macready's Metal Co. Ltd., 138, 365
Magco Ltd., 428
Maguire, T. R., 379
Mandoval Ltd., 573
Manifold Machinery Co. Ltd., 231
Mann, Albert, Engng. Co. Ltd., 377
Mann, A. C., 84
Manufacturers Equipment Co. Ltd., 285
Matbaix, Gaston E., 509
Marconi's Wireless Telegraph Co. Ltd., 78
Marconi Co. Ltd., 91, 237, 480
Marley Concrete Ltd., 469
Marshall, A. N., 84, 571
Martin, Harry, 381
Martin, Kenneth James, 185
Martonair Ltd., 85, 172, 286, 337
Massey, B. & S. Ltd., 473, 510, 531
Massey-Ferguson Engineering Centre, 41
Mathews, E., Hydraulics Ltd., 460
Matthews, Professor P. T., 233
Matthews and Yates Ltd., 284, 380
Matterson Ltd., 86, 187, 572
de Mattos, David Neville, 436
Mavitta Drafting Machines Ltd., 379
Mavor & Coulson Ltd., 88
Mawdsley's Ltd., 320, 338
Mawle, J. W., 185
Maxam Power Ltd., 467
Meadows, Henry, Ltd., 457
Measuring Instruments (Pullin) Ltd., 265
Meddings, W. J., Ltd., 88, 310
Melwood Thermoplastics Ltd., 234
Merrin, A. E., 37
Metal Industries Ltd., 136
Metal Parts Ltd., 266
Metalectric Furnaces Ltd., 383, 527
Metalock (Britain) Ltd., 86, 378
Metco Ltd., 363
Meter-Flow Ltd., 214, 481
Meteorological Office, 142
Micanite and Insulators Co. Ltd., 412
Michell Bearings Ltd., 86
Microcell Ltd., 34
Midgley & Sutcliffe Ltd., 34
Midland Industries Ltd., 377
Mimic Diagrams Ltd., 329
Mingori Ltd., 562
The Mining and Compressor Engineering Co. Ltd., 28
Milford-Astor Ltd., 81
Mills, James, Ltd., 91
Milnes, J., 479
Milnes, J. O., 336
The Mirlees Watson Co. Ltd., 88
Mitchell, Sidney, 571

Mobil Oil Co. Ltd., 188, 527
Moflash Co. Ltd., 330
Molykote Gt. Britain Ltd., 268
Molyneux, F., 239, 292, 387, 446
Monks & Crane Ltd., 188, 234, 314
Mono Pumps Ltd., 125
Moon Bros. Ltd., 337, 436
Moore & Wright (Sheffield) Ltd., 188
Morgan Components Ltd., 25
Morganite Carbon Ltd., 327
Morganite Electroheat Ltd., 285, 507
Morganite Research and Development Co. Ltd., 386
Morganite Thermal Designs Ltd., 383
Morris & Butlers Ltd., 527
Morton, W. D., 336
Moss Gear Company, 409
Mott, H. P., 37
Moxey Ltd., 285
Muntz, P. H., & Barwell Ltd., 480
Myer, K. N., 234

N

Nadella Corporation, 380
National Coal Board, 245, 291, 294, 389, 393
National Engineering Laboratory, 192, 241, 287, 529
National Industrial Fuel Efficiency Service (NIFES), 499
National Lending Library for Science and Technology, 92
NCK-Rapier Ltd., 438
Neill, James, & Co. (Sheffield) Ltd., 116, 120, 321, 409, 467, 554
Neldco Processes Ltd., 267, 284
Newall Group Sales Ltd., 481
Newcomen Society, 91
Newmarket Transistors Ltd., 223
Newton Chambers Engineering Ltd., 527
Nig Manufacturing Co. Ltd., 460
North British Rubber Co. Ltd., 522
North of Scotland Hydro Electric Board, 192
Non-Destructive Testing Society of Great Britain, 60
Norris Brothers Ltd., 412
Norton Grinding Wheel Co. Ltd., 88
Notley, T. F., 437
Nuckey, Scott & Co. Ltd., 71

O

OEEC, 114
Ogden, K., 378
Old Park Engineering Ltd., 525
Omic Ltd., 29
Opancol Ltd., 368
Opperman, S. E., Ltd., 220
Optical-Mechanical Instruments Ltd., 39
Original Document Processing Ltd., 414
Osborn, P. L., 436
Osborn, Samuel, & Co. Ltd., 187
Osborne, A. E., 525
Owen, David, 336
Ozalid Co., 137

P

Padley, Wilfred, 135
Painton & Co. Ltd., 419
Palmer Aero Products Ltd., 318
Palmer, B. S., & Co. Ltd., 25
Palmer, Dr. P. J., 185
Palmer, S. E., 37, 84
Parc Mine, 45
Parlox Ltd., 183
Parker, G., 336
Parker, T. G., 479
Parker, Winder & Achurch Ltd., 470
Parmeko Ltd., 501
Paterson Engineering Co. Ltd., 527
Paterson, Thomas, 526
Payne Products International Ltd., 181
Pearce, R. H., 234
Pearse, W. H., 437
Peat, T. A., 479
Peco Ltd., 61
Pegus Ltd., 123
Pennsalt Metal Processing, 333
Perfection Engineering Ltd., 235
Perkins Engines Ltd., 432
Perkins Gas Turbines Ltd., 381
Perkins Group, 376, 527
Permali Ltd., 74
Perry, A. W., 526
Petters Ltd., 338, 422
Pheniton Machine Tool Co. Ltd., 235
Philips Croydon Works Ltd., 212
Phillips, F. M., 37
Photronic Controls Ltd., 367
Picard, Henri, & Frere Ltd., 264
Pike, Allan R., 378
Pitchford, J., 84
Planer, G. V., Ltd., 128
Plastic Coatings Ltd., 36
Plenty & Son Ltd., 420
Plessey Company (UK) Ltd., 38, 39, 328
Plywood Manufacturers' Association, 42
Pneumatic Power Co., 318
Pneumatic Systems (Engineers) Ltd., 416
Pneumolift Systems Ltd., 371
Pollard Ball & Roller Bearing Co. Ltd., 28, 235
Polson, Martin M., 480
Polymathic Engng. Co. Ltd., 374
Polypenco Ltd., 31, 527
Potter, A. A., 37
Powell & Co., 468
Power-Gas Corporation Ltd., 187
Pownall, J. F., 487
Pragmatic Ltd., 527
Precious Metal Depositors Ltd., 560
Precision Rubbers Ltd., 559
Precitools Ltd., 506
Press Equipment Ltd., 326, 375
Pressac Ltd., 519
Production Engineering Research Association, 41, 235, 238, 245, 372, 530, 537, 544, 573
Pryor, Edward, & Son Ltd., 161
Pye, W. G., & Co. Ltd., 38
Pye Ltd., 76, 234, 286
Pyrene Co. Ltd., 188, 415

Q

Quayle, J. P., 479
Quinn, E., 233

R

RCM (Air Distribution) Ltd., 284, 364, 435
R.G.S. Electro-Pneumatics Ltd., 478
Racine Laboratories Ltd., 311
Radiovisor Parent Ltd., 38, 138, 234, 381, 471
Ramick Products Co., 115
Randall, A. E., 336
Randall, James H., & Son Ltd., 128
Rank Organization, 393
Rapid Magnetic Ltd., 88, 470
Raviolo, V. G., 259
Rawcliffe, J., 84
Rawlplug Co. Ltd., 138
Ray Engineering Co. Ltd., 558
Reason, Jack, 526
Record Electrical Co. Ltd., 39, 375, 573
Reddy Hydrostatic Sales Ltd., 480
Redland Engineering Ltd., 552
Redman Tools Ltd., 136
Reliance Controls Ltd., 435
Reliance Trucks Ltd., 434
Remington Rand Ltd., 504
Renault Machine Tools (U.K.) Ltd., 73, 207, 380, 477
Renold Chains Ltd., 235, 381, 382, 463, 481
Research Electronics Ltd., 270
Revol Ltd., 270
Rhind, J. P. G., 378
Rhodes, Joseph, & Sons Ltd., 277
Richardson, Arthur, 185
Richardson, H. A., 37
Richardson Scale Co. 136
Richmond, G. A., 283
Riggs, Michael, 437
Riordan Engineering Ltd., 438, 503
Ringway Machine Tools Ltd., 39
Road Haulage Association, 550
Roberts Bros. (Audnam) Ltd., 281
Roberts, J. W., Ltd., 573
Roberts, Lt.-Col. K. W. L. 233
Robertson, W. H. A., & Co. Ltd., 39, 573
Robinson, C., 526
Robinson, L. M., 37
Rockall, Charles, 571
Rocol Ltd., 269
Rocol Ltd., 420
Rockwell Machine Tool Co. Ltd., 38, 63
Rolatruc Ltd., 472
Rolls Royce Ltd., 136, 527, 566
Ronayne, Michael J., 479
Roneo Ltd., 527
Rose, K. T., 37
Rose, Downs & Thompson Ltd., 527
Rosenberg, S., & Sons (Tinware) Ltd., 466
Ross, Donald, & Partners, Ltd., 261
Rotherham, Dr. Leonard, 233
Rotork Engineering Co. Ltd., 32 285
Row, R. H. Paddon, 526
Rowe, Frank, 379
Rowlands, D., 283
Royal Dutch/Shell Group of Companies, 344
Royal Society, 84
Royal Society of Arts, 188, 481
Royal Society for the Prevention of Accidents, 481
Royce Electric Furnaces Ltd., 337, 513
Ruberoid Ltd., 215
Rubert & Co. Ltd., 337, 474, 506
Rubery, Owen & Co. Ltd., 285, 568
Rudd, B., 436
Rudkin & Riley Ltd., 224
Russell Constructions Ltd., 418

S

S.E. Laboratories (Engineering) Ltd., 472
SGB Building Equipment Divn., 39
S.S.S. Gears Ltd., 67
Safety in Mines Research Establishment, 42
Sanderson Brothers & Newbould Ltd., 188, 338, 438
Sandvik Swedish Steels Ltd., 262
Saunders, N., Metal Products Ltd., 176
Saunders Valve Co. Ltd., 278
Savage, J., 233
Savage & Parsons Ltd., 475
Scarf, C. T., 135
Schofield, Basil W., 135
Schrader's, A., Son, 420
Scott, Hugh J., & Co. (Belfast) Ltd., 219
Scott, Sir William, 379
Scott, Bowman, 526
Scottish Machine Tool Corpn. Ltd., 31
Scotts Engineering (Newport) Ltd., 375
Soculate Ltd., 520
Selby, Isaac, 233
Selson Machine Tool Co. Ltd., 325
Selwood, Wm. R., Ltd., 164
Sephton, H. J., 37
Servomex Controls Ltd., 313
Shandon Scientific Co. Ltd., 225
Sharples Centrifuges, 573
Shaw, Francis, (Canada) Ltd., 167
Shawford Control Gear Co. Ltd., 276
Shay, J. E., Ltd., 383
Sheepbridge Equipment Ltd., 136
Sheffield Industries Exhibition Centre, 458
Sheffield Twist Drill & Steel Co. Ltd., 285
Shell-Mex and B.P. Ltd., 482
Shell Research Ltd., 453
Sheppard, W. H., 42, 100, 151, 195
Ship-Machinery Manufacturers Assocn., 286
Siers, Eric, 437
Sigmund, Miroslav, 571
Sigmund Pulsometer Pumps Ltd., 505
Sigsworth, A. C. M., 571
Sillars, Dr. R. W., 571
Silvaflame Co. Ltd., 364
Singer, Thomas K., 37
Singlehurst Engineering Ltd., 465
Simm Engineering Group, 136
Simmonds, Dr. W. A., 335
Simms Motor Units Ltd., 33
Simon Handling Engineers Ltd., 118
Simplifix Couplings Ltd., 264
Simpson, W. M., 526
Sintered Products Ltd., 285
Slater, Harold, 283
Sloan, S. Gordon, 379
Slocombe, C. M., 571
Smallwood, E., & Co. Ltd., 86
Small Electric Motors Ltd., 163
Smart, J. W., 185
Smith, Daniel, Ltd., 38
Smith, Harold, 84
Smith, J. C., 37
Smith, K. G., 283
Smith, Sydney, & Sons (Nottingham) Ltd., 161
Smiths Industrial Division, 573
Smiths Jacking Systems Ltd., 268
Soag Machine Tools Ltd., 502
Society of Instrument Technology, 38
Solent Repetition Ltd., 329
Solway Chemicals Ltd., 215
Sovex Ltd., 381, 532
Sound Diffusion (Auto-thermatic) Ltd., 124
Southam, J. C. L., 336
Speakman, J. P., 378
Spectra Chemicals Ltd., 460
Spence, Ronald, 336
Spencer-Bonecourt-Clarkson Ltd., 186
Spencer Franklin, Ltd., 363
Spencer & Halstead Ltd., 116
Spencer (Melksham) Ltd., 282
Sperry Gyroscope Co. Ltd., 469
Spiraflite Ltd., 183
Spraggon, G. S., 283
Stacey, James R., 525
Stanhope Machine Tools Ltd., 410
Stanier, Sir William, 185
Standley, G. M., 283
Stanley Works (G.B.) Ltd., 525, 573
Stanton Ironworks, 10
Startrite Engineering Co. Ltd., 558
Statter, J. G. & Co. Ltd., 285
Steam & Power Development Co. Ltd., 280
Steelweld Ltd., 173
Stewarts and Lloyds Ltd., 92, 381
Stokes, F. J., Ltd., 564
Stone, J., & Co. (Deptford) Ltd., 530, 561
Stone-Wallwork Ltd., 481
Storey, Thos. (Engineers) Ltd., 39
Stothert & Pitt Ltd., 338, 481
Stuart, Dr. D. J. K., 84
Sturtevant Engineering Co. Ltd., 338
Submarine Cables Ltd., 88
Suffolk Iron Foundry (1920) Ltd., 39, 188, 234
Sutcliffe, G. S., 571
Sutton, G. B., 526
Sutton Power Units Ltd., 336
Super Oil Seals & Gaskets Ltd., 38, 134, 482
Swiney, P. J. M., 135
Sykes, Henry, Ltd., 87, 267
Sykes, S. T., 37

T

Tabor, Dr. David, 233
Talbot Tool Co. Ltd., 324
Tapscott, P. M., 37
Taylor, Arthur, 336
Taylor, Charles (Birmingham) Ltd., 338
Taylor, T. J., 480
Taylor Woodrow Construction Ltd., 106, 235
Technical Market Research Ltd., 573
Telcon-Magnetic Cores Ltd., 87
Teleflex Products Ltd., 64
Terry, Herbert, & Sons Ltd., 88
Thomas, A., & Sons, 554
Thomas, E. G., 234
Thomas Industrial Automation Ltd., 427
Thomas, Richard, & Baldwins Ltd., 118, 121
Thompson, J. Walter, Company, 313
Thomson Industries, Inc., 235
Thomson, W. R., 7, 53, 107, 145
Thor Tools Ltd., 273, 427
Thorn Electronics Ltd., 527
Tibbles, R. C. G., 233
Tilghman's Ltd., 285
Tinwell, Norman, 185
Tippers Ltd., 188
Tollbridge Trailers Ltd., 569
Tolwood Multifasteners Ltd., 468
Toothill, J. N., 336
Towler Bros. (Patents) Ltd., 31
Trafalgar Engineering Co. Ltd., 165
Transkem Pumps Ltd., 501
Transport Equipment (Thornycroft) Ltd., 221
Trist, Ronald, & Co., 320
Trowbridge, M. E. O'K., 571
Tube Investments Ltd., 39
Tube Products Ltd., 173, 338
Tuberfield, M., 135
Tuplin, Dr. W. A., 382
Turnbull, F. L., 379
Turner Bros. Asbestos Co. Ltd., 39, 175, 383
Turner & Brown Ltd., 229
Turner & Newall Ltd., 214
Twiflex Couplings Ltd., 38, 87, 363

U

Udal, J. P., Ltd., 132, 337
Uddeholm Ltd., 234
Ultra High Pressure Units (Ireland) Ltd., 338
Unbrako Socket Screw Co. Ltd., 27
Uni-Tubes Ltd., 272
Union Carbide Ltd., 422
Union Fibre Pipes (Great Britain) Ltd., 504
United Kingdom Oil Pipelines Ltd., 483
United Nations Secretariat, 259
United Steel Co. Ltd., 2, 38
Upton, R. F., 571
U.S. Industries Inc. Gt. Britain Ltd., 338, 527
U.S. National Bureau of Standards, 16, 153

V

V.M.E. Conveyor & Furnace Co. Ltd., 284, 437
Vacuum Industrial Applications, Ltd., 421
Vacuum Metallurgical Developments, 29
Vaughan, Edgar, & Co. Ltd., 39
Vero Precision Engineering Ltd., 262
Vickers-Armstrongs (Engineers) Ltd., 137, 187, 380, 527
Vickers-Armstrongs (South Marton) Ltd., 269
Victor Products (Wallsend) Ltd., 460
Vincent, C. E., 135
Vines, M., 378
Vries, L. De, & Son (Diamond Tools) Ltd., 212
Vulcascot (Gt. Britain) Ltd., 184

W

WCB Containers Ltd., 178, 437
Walker, C. & W., Ltd., 87
Walker, D. D., 378
Walker, James, & Co. Ltd., 124
Walker, Philip Holmes, 526
Walker Crosweller & Co. Ltd., 137, 382
Walkers and County Cars Ltd., 177
Wall Colmonoy (Canada) Ltd., 189
Waller, John, 19, 56, 109, 156, 204, 254, 303, 358, 402, 454, 495, 545
Walters, K. A., 479
Walton, K. G., 233
Wanson Co. Ltd., 188
Ward, S. A., & Co. Ltd., 278
Ward, Thos. W., Ltd., 137, 382, 438, 480
Waterbury Ltd., 501
Waterbury Farrel Foundry & Machine Co., 329
Watson, E. W., 526
Watson, J. A. V., 233
Watson, Joseph, & Sons Ltd., 81
Watson, Peter, 378
Watts, J. L., 48, 242, 295, 350
Weatherill, F. E., Ltd., 87
Weaving, Commander P. D. V., 378
Weir, G. & J., Ltd., 270
Weir, G. & J., Ltd., 438, 573
Welconstruct Co. Ltd., 374, 383
Welding Improvements Ltd., 31
Wellings, Jack A., 379
Wellman Smith Owen Group, 186
Wells, L. W., 185
Welsh, G., 336
Wenham, R. A., 84, 336
Wentworth, F. & G., & Co., 334
Wessex Industries (Poole) Ltd., 77
West, John, 184
Westbrook, G. S., Ltd., 232
Westdock Ltd., 126
Westinghouse Brake & Signal Co. Ltd., 138, 222, 235, 284, 285, 314, 365, 383, 573
Westminster Engineering Co., 334
Westwood Stationery Ltd., 422
Wheeler, C. R., 283, 288
White, Thomas, & Sons 67
White, W. T., 571
Whitehouse, Martin H. L., 283
Whittaker Hall & Co. (1929) Ltd., 471
Whitworth, W. B., 84
Whitworth Gloster Aircraft Ltd., 123
Whitworth Gloster Equipment, 280
Wickman Machine Tool Sales Ltd., 217
Wilcox, E., & Co. Chains Ltd., 502
Wild Barfield, Ltd., 284, 380, 572
Williams, J. M., 234
Willmott, Francis B., 449
Wilson, Professor A. J. C., 233
Wilson, G. H., 37, 184
Wilson, Ray, 84
Wilson, Dr. W., 185
Winflex Engineering Co., 324
Winhall & Rogers Ltd., 36
Winn, Charles & Co. Ltd., 230
Winning, J., 533
Winterbottom, Eric, 283
Winhart, D. F., & Co. Ltd., 570
Wolf Electric Tools, 187, 507
Wolf & Sabine Ltd., 364
Wood, C., 479
Wood, F., 234
Wood, H. I., 135
Woodford, D. R., 283
Woods of Colchester Ltd., 279, 471
Woof, T. N., 37
Woof & Sabine Ltd., 431
Work, Colonel A. L., 436
Wormall, J. B., 37
Worn, C. L. G., 571
Worthington-Simpson Ltd., 232, 482
Wright Rain Ltd., 438

Y

Yale & Towne Manufg. Co., 187, 210, 271, 499
Yeo, S. W., 283
York Shipley Ltd., 38
Yorkshire Electricity Board, 187
Yorkshire Engine Co. Ltd., 284
Yorkshire Engineering and Welding Co. (Bradford) Ltd., 177
Yorkshire Imperial Plastics Ltd., 338
Young, Joseph, & Sons Ltd., 129

Z

Zinc Development Association, 527

Obituary

Allison, W. L., 85
Baty, James E., 37
Brett, Charles W., 37
Clarke, Sir Horace William, 437
Collyer, William Thomas, 85
Curtis, Eric, 336
Dean, F. T., 185
Franks, Miss Dorothy, 185
Gimson, D. M., 185
Halpin, Lawrence, 85
Heath, Harold, 571
Kearns, Sir Lionel, 85
Mathews, C. B., 37
Morgan, Leonard A., 480
Mossay, P. A., 379
Nuffield, Lord, 480
Perkins, Donald H., 437
Phillips, L. H. J., 526
Robertson, Thomas Paton, 336
Simpson, N. G., 283
Spreckley, Air Marshal Sir Herbert D., 480
Tabb, R. P. E., 283
Topham, W. L., 185
Thompson, George, 37
Wardhaugh, Russell, 85
Wilkin, A. V., 135
Wilson, William J., 283